

ABSTRACT OF THE DISCLOSURE

The present invention provides muscle-derived cells, preferably myoblasts and muscle-derived stem cells, genetically engineered to contain and express one or more heterologous genes or functional segments of such genes, for delivery of the encoded gene products at or near sites of musculoskeletal, bone, ligament, meniscus, cartilage or genitourinary disease, injury, defect, or dysfunction. *Ex vivo* myoblast mediated gene delivery of human inducible nitric oxide synthase, and the resulting production of nitric oxide at and around the site of injury, are particularly provided by the invention as a treatment for lower genitourinary tract dysfunctions. *Ex vivo* gene transfer for the musculoskeletal system includes genes encoding acidic fibroblast growth factor, basic fibroblast growth factor, epidermal growth factor, insulin-like growth factor, platelet derived growth factor, transforming growth factor- β , transforming growth factor- α , nerve growth factor and interleukin-1 receptor antagonist protein (IRAP), bone morphogenetic protein (BMPs), cartilage derived morphogenetic protein (CDMPs), vascular endothelial growth factor (VEGF), and sonic hedgehog proteins.